Space Weather Forecast

Issued on Saturday 16 November 2024 at 00:14 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Isolated Minor/Moderate radio blackouts (R1/R2) possible. Slight chance of Minor Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate during the past 24-hours with the peak flare a low level Moderate-class flare 15/0146 UTC from a small bipolar region located in the southeast quadrant. This region also produced a similar low level Moderate-class flare at 15/1218 UTC.

There are now three sunspot regions on the visible disc, with the main region consisting of two fairly large and elongated lead/trailer portions located in the southwest quadrant. The intermediate spots have increasingly diminished, although there remains a small delta spot configuration in the trailer portion. The other region located in the northeast is small and magnetically simple.

No Earth-directed Coronal Mass Ejections (CMEs) were observed over the past 24 hours in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were between 360-450km/s. The interplanetary magnetic field (IMF), Bt, was mostly weak with some brief moderate increases. The north-south component, Bz was predominantly negative at weak to moderate levels. Geomagnetic activity was Quiet to Unsettled (Kp 2-3), with an Active (Kp 4) interval 15/0300-0600 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity expected, with a chance of Moderate flares and a slight chance of Strong flares, most likely from the largest sunspot group in the southwest of the visible disc.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast.

Background to slightly elevated solar wind speeds are expected, although from late Day 2 (17th) there is a chance of elevated wind speeds of around 500km/s occurring with a further connection to faster solar winds. Geomagnetic activity is expected to be generally Quiet to Unsettled (Kp 2-3) initially, with a chance of Active (Kp 4) intervals and a slight chance of isolated G1/Minor

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Geomagnetic Storm (Kp 5) intervals. From later Day 2 (17 Nov) activity activity expected to increase slightly, becoming Unsettled to Active (Kp 3-4) with an increased chance of isolated G1/Minor Geomagnetic Storm (Kp 5) intervals.

Energetic Particles / Solar Radiation: High energy proton flux is most likely to remain at background levels with Solar Radiation storms unlikely. There is a slight chance of S1/Minor solar radiation storms due to the potential for flaring from the largest sunspot group as it rotates westward across the Sun.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	20	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	30	40	40	40
Very Active	R3-R5 (X Class)	No	5	10	10	10

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	10	10	10
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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